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PATENT APPLICATION
Docket No. 11675.184.1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of		)
	Salman Akram	)
Serial No.	10/033,233	)
Filed:	December 28, 2001	) Art Unit 2823
For:	CHIP PACKAGE WITH GREASE HEAT SINK AND METHOD OF MAKING	)
Confirmation No.:	9685	)
Examiner:	Khiem D Nguyen	)

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AMENDMENT AND RESPONSE UNDER 37 C.F.R. § 1.116

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action dated August 5, 2004, please enter the following amendments and remarks into the file of the above-identified application.

AMENDMENTS TO THE CLAIMS

Claims 1-15 (cancelled)

16. (previously presented) A method of making an IC chip package having a first IC chip with an active surface, the active surface having extending therefrom an electrical connector in electrical communication with the first IC chip, the first IC chip being mounted upon a first side of a board-on-chip (BOC) substrate having said first side that is opposite a second side thereof, the method comprising:

providing a second IC chip having an active surface and being disposed over the first side of the BOC substrate;

providing a container disposed upon the BOC substrate, the container in contact with the active surface of the first IC chip; and

injecting a grease between the BOC substrate and the container;

wherein the grease:

is in contact with the electrical connector and with the active surfaces of each of the first and second IC chips; and

is enclosed within the container and the substrate.

17. (original) The method as defined in Claim 16, further comprising:

providing a third IC chip having an active surface and being disposed over the first side of the BOC substrate and over the second IC chip such that the grease is in contact with the active surface of the third IC chip.

18. (previously presented) The method as defined in Claim 17, further comprising:

operating the first, second, and third IC chips to generate heat therefrom; and

conducting the heat from the electrical connector and from the first, second, and third IC chips to the grease, to the container, and to the ambient.

19. (original) The method as defined in Claim 16, wherein the grease has:

a thermal conductivity in a range from about 2 Watts/m·K to about 5 Watts/m·K;

a dielectric constant in a range from less than about 6 to about 9; and

a melting point in a range from about 190° C to about 220° C.

20. (original) The method as defined in claim 16, further comprising:

generating heat from at least one of the IC chips by operating said at least one of the IC chips; and

allowing the heat to propagate to the grease and to the container.

21. (new) The method as defined in Claim 16, further comprising:

securing the container to the substrate with a dam structure that contacts the grease.

22. (new) The method as defined in Claim 16, further comprising:

operating the first and second IC chips to generate heat therefrom; and

conducting the heat from the IC chips and the electrical connector to the grease, to the container, and to the ambient.

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23. (new) The method as defined in Claim 16, wherein the grease has a thermal conductivity that is less than a thermal conductivity of the container.

24. (new) The method as defined in Claim 16, wherein the IC chip package comprises IC chip elements, wherein the container disposed upon the substrate encloses a volume external to the IC chip elements, and wherein the injecting a grease comprises filling with the grease the volume enclosed by the container.

25. (new) The method as defined in Claim 16, wherein the container comprises a metal that has a thermal conductivity greater than the thermal conductivity of the grease.

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26. (new) A method of making an IC chip package, comprising:

providing a first IC chip with an active surface, the active surface having extending therefrom an electrical connector in electrical communication with the first IC chip;

providing a board-on-chip (BOC) substrate having a first side;

mounting the first IC chip upon the first side of the BOC substrate;

providing a second IC chip having an active surface and being disposed over the first side of the BOC substrate;

providing a third IC chip having an active surface and being disposed over the first side of the BOC substrate and over the second IC chip;

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providing a container disposed upon the BOC substrate, the container in contact with the active surface of the first IC chip; and

injecting a grease between the BOC substrate and the container;

wherein the grease:

is in contact with the electrical connector and with the active surfaces of each of the first, second and third IC chips; and

is enclosed within the container and the substrate.

27. (new) The method of Claim 26, further comprising:

operating the first, second, and third IC chips to generate heat therefrom; and

conducting the heat from the electrical connector and from the first, second, and third IC chips to the grease, to the container, and to the ambient.

28. (new) The method of Claim 26, wherein the grease has:

a thermal conductivity in a range from about 2 Watts/m·K to about 5 Watts/m·K;

a dielectric constant in a range from less than about 6 to about 9; and

a melting point in a range from about 190° C to about 220° C.

29. (new) The method of Claim 26, further comprising:

generating heat from at least one of the IC chips by operating said at least one of the IC chips; and

allowing the heat to propagate to the grease and to the container.

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30. (new) The method of Claim 26, further comprising:

securing the container to the substrate with a dam structure that contacts the grease.

31. (new) The method of Claim 26, wherein the grease has a thermal conductivity that is less than a thermal conductivity of the container.

32. (new) The method of Claim 26, wherein the IC chip package comprises IC chip elements, wherein the container disposed upon the substrate encloses a volume external to the IC chip elements, and wherein the injecting a grease comprises filling with the grease the volume enclosed by the container.

33. (new) The method of Claim 26, wherein the container comprises a metal that has a thermal conductivity greater than the thermal conductivity of the grease.

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